AMENDMENTS TO THE SPECIFICATION:

Page 1, please add the following new paragraphs before paragraph [0001]:

[0000.2] CROSS-REFERENCE TO RELATED APPLICATIONS

[0000.4] This application is a 35 USC 371 application of PCT/DE 03/04111 filed on December 12, 2003.

[0000.6] BACKGROUND OF THE INVENTION

Please replace paragraph [0003] with the following amended paragraph:

[0003] ~~Background of the Invention~~ DESCRIPTION OF THE PRIOR ART

Please replace paragraph [0004] with the following amended paragraph:

[0004] European Patent Disclosure EP 0 562 046 B1 discloses an actuation and valve assembly with damping for an electronically controlled injection unit. The actuation and valve assembly for a hydraulic unit has an electrically excitable electromagnet assembly with a fixed stator and a movable armature. The armature includes a first and a second surface~~.~~ ~~The first and second surfaces of the armature define~~ defining a first and second hollow chamber, and the first surface of the armature is oriented toward the stator. A valve ~~is provided which is~~ connected to the armature~~. The valve~~ is capable of carrying a hydraulic actuating fluid from a sump to the injection system. A damping fluid can be collected there relative to one of the hollow chambers of the electromagnet assembly and drained away from there again. By means of a region of a valve needle protruding into a central bore, the fluidic communication of the damping fluid can be selectively opened and closed in proportion to the viscosity of this fluid.

Page 2, please replace paragraph [0005] with the following amended paragraph:

[0005] German Patent Disclosure DE 101 23 910.6 pertains to a fuel injection system~~. This system is~~ used in an internal combustion engine~~. The~~ in which the combustion chambers ~~of the engine~~ are supplied with fuel via fuel injectors. The fuel injectors are acted upon in turn via a high-pressure source; moreover, the fuel injection system includes a pressure booster which has a movable pressure booster piston. This piston divides a chamber that can be connected to the high-pressure source from a high-pressure chamber that communicates with the fuel injector. The high fuel pressure in the high-pressure chamber can be varied, by filling a back chamber of a pressure boosting device or by evacuating fuel from this back chamber of the fuel booster.

Page 3, please replace paragraph [0007] with the following amended paragraph:

[0007] ~~Summary of the Invention~~ SUMMARY OF THE INVENTION

Please replace paragraph [0010] with the following amended paragraph:

[0010] The damping face can extend on the face end of the magnet core toward the magnet armature both parallel to this face end and at a damping adjustment angle, relative to the end face of the magnet armature. The desired damping behavior can be established by the choice of the damping adjustment angle. Besides a hydraulic damping chamber that opens outward in the radial direction, this damping chamber can also narrow increasingly outward, in terms of the radial direction, relative to the axis of symmetry of the magnet coil and of the magnet armature. An unwanted, premature outflow of the damping fluid (such as fuel) from the hydraulic damping chamber can be ~~attained~~ avoided by the embodiment of a luglike protrusion on the outside radius of the hydraulic damping chamber. Upon fast opening of the magnet armature, the luglike protrusion acts as a throttling element, and upon an upward

motion of the magnet armature, it effects throttling of the flow of the actuating fluid, such as fuel or Diesel fuel, from the hydraulic damping chamber upon opening of the magnet armature. By means of the choice of a non-magnetic material, the magnetic properties of the magnet valve - in particular, the preservation of the remanent air gap - remain unimpaired.

Page 4, please replace paragraph [0011] with the following amended paragraph:

[0011] ~~**Drawing**~~ <u>BRIEF DESCRIPTION OF THE DRAWINGS</u>

Please replace paragraph [0012] with the following amended paragraph:

[0012] The invention is described in further detail below in conjunction with the <u>drawings, in which:</u> ~~**drawing.**~~

Please delete paragraph [0013].

Please replace paragraph [0014] with the following amended paragraph:

[0014] Fig. 1[[,]] <u>is an elevation view, in section, of a prior art</u> a magnet valve whose stroke length is defined by a stop sleeve;

Please replace paragraph [0015] with the following amended paragraph:

[0015] Fig. 2[[,]] <u>is a view similar to Fig. 1 but on an enlarged scale of</u> a magnet valve embodied according to the invention, with a magnet core which has a surface area that generates a damping force;

Please replace paragraph [0016] with the following amended paragraph:

[0016] Fig. 3[[,]] <u>is</u> a magnet core with a stop sleeve located on the outside;

Please replace paragraph [0017] with the following amended paragraph:

[0017] Fig. 4[[,]] <u>is</u> pressure distributions in the hydraulic damping chamber, in the variant embodiments of Figs. 2 and 3;

Please replace paragraph [0018] with the following amended paragraph:

[0018] Fig. 5[[,]] <u>shows</u> the comparison of damping forces that are established in the variant embodiments of Figs. 2 and 3; and

Please replace paragraph [0019] with the following amended paragraph:

[0019] Fig. 6[[,]] <u>is</u> a variant embodiment of a magnet core without a stop sleeve.

Page 5, please replace paragraph [0020] with the following amended paragraph:

[0020] ~~**Variant Embodiments**~~ <u>DESCRIPTION OF THE PREFERRED EMBODIMENTS</u>

Please delete paragraph [0021].

Please replace paragraph [0022] with the following amended paragraph:

[0022] ~~A~~ <u>As shown in Fig. 1, a</u> magnet valve 1, which is used to actuate a fuel injector for self-igniting internal combustion engines, includes a magnet core 2. A magnet coil 3 is let into the magnet core 2. The magnet core 2 includes a first end face 4 and a second end face 5 that points toward a magnet armature 10. A bore 6 is embodied in the magnet core 2, and a stop sleeve 7 is let into the bore. A face end 8 is embodied on the lower end of the stop sleeve 7 and forms a stop for one face end 12 of an armature plate 11 of the magnet armature 10. The stop sleeve 7 surrounds a closing spring 9, which urges the face end 12 of the magnet armature 10 in the closing direction. The face end 12 of the magnet armature 10 is embodied on its armature plate 11. In the variant embodiment of the magnet valve known from the prior art, the magnet armature 10 is embodied as a one-piece armature; that is, the armature plate 11 and the armature bolt of the magnet armature 10 form a single component. Alternatively, the armature plate 11 of the magnet armature 10 may also be embodied displaceably on the armature bolt. In that case, or in other words with a magnet armature

embodied in two parts, the armature plate 11 is acted upon via a spring element which surrounds the armature bolt.

Please replace paragraph [0023] with the following amended paragraph:

[0023] Reference numeral 13 indicates a remanent air gap, which defines the spacing between the second end face 5 of the magnet core 2 and the face end 12 of the armature plate 11 of the magnet armature 10. In the variant embodiment, shown in Fig. 1, of a magnet valve 1 with a stop sleeve 7, the magnet coil 3 is let in on the lower region of the magnet core 2, establishing an annularly configured free space 14 between the underside of the magnet coil and the second end face 5 of the magnet core 2. The <u>height of the</u> annularly configured free space 14 between the underside of the magnet coil 3 and the end face 12 of the armature plate 11 of the magnet armature 10 exceeds <u>that of</u> the remanent air gap 13; the spacing between the magnet coil 3 and the top 12 of the armature plate 11 is identified by reference numeral 15.

Page 7, please replace paragraph [0028] with the following amended paragraph:

[0028] The hydraulic damping chamber 31 is defined toward the magnet core 2, on the second end face 5 thereof, by a damping face 20, which begins at the outside diameter ~~28~~ of the stop sleeve 7 and extends as far as the ~~circumference~~ <u>circumferential surface</u> 27 of the magnet core 2. Moreover, the hydraulic damping chamber 31 is defined by the face end 12 of the armature plate 11 of the magnet armature 10. The damping face 20 toward the magnet armature comprises a non-magnetic material 16, such as plastic material, so as not to impair the magnetic properties of the magnet valve 1. The attainable damping force can be adjusted by means of the geometry of the damping face 20, which generates a damping force that counteracts the opening motions of the armature plate 11 of the magnet armature 10.

Page 8, please replace paragraph [0029] with the following amended paragraph:

[0029] On the second end face 5 of the magnet core 2, which faces the face end 12 of the armature plate 11 of the magnet armature 10, the damping face 20 that defines the hydraulic damping chamber 31 can be at a constant spacing 15; that is, fuel emerging parallel to the face end 12 of the armature plate 11 and to the face end 8 of the stop sleeve 7 enters the hydraulic damping chamber 31. In this variant embodiment, the hydraulic damping chamber 31 has a constant cross section extending in the radial direction.

Please replace paragraph [0030] with the following amended paragraph:

[0030] In a further variant embodiment of the hydraulic damping chamber 31, the damping face 20 may be embodied at an angle 17 on the second end face 5 of the magnet core 2. In this variant embodiment, the spacing between the face end 12 of the armature plate 11 of the magnet armature 10 and the damping face 20 on the second face end 5 of the magnet core 2 increases continuously in the radial direction. As a result, it is attained that the fuel flowing into the hydraulic damping chamber 31 from the outlet gap 18 generates a damping force, counteracting the opening motion of the armature plate 11 of the magnet armature 10, that is greater than the damping force that can be generated by only the face end 8 of the stop sleeve 7 (as shown in Fig. 1). By the choice of the angle 17, the surface area that generates the damping force can be increased, and as a result, the damping force that counteracts the opening motion of the magnet armature 10 or of the armature plate ~~1~~ 11 can also be increased considerably.

Page 9, please replace paragraph [0033] with the following amended paragraph:

[0033] The damping face 20 on the second end face 5 of the magnet core 2 includes a first annular face portion 21, which extends from the outside radius 28 of the stop sleeve 7 to the

inside radius 25 of the magnet coil 3 inside the magnet core 2. The damping face 20 furthermore includes a second annular face portion 22, which extends from the inside radius 25 of the magnet coil 3 to its outside radius 26, and a third annular face portion 23, which extends from the outside radius 26 of the magnet coil 3 inside the magnet core 2 to the outer ~~circumference~~ circumferential surface 27 of the magnet core 2. Inside the third annular face portion 23, the aforementioned luglike protrusion 32 that develops a throttling action can be embodied on the damping face 20 that defines the annularly configured hydraulic damping chamber 31; with the face end 12 of the armature plate 11, this protrusion defines ~~an~~ the outlet opening 35, whose opening cross section is dependent on the stroke length and the speed of motion of the magnet armature 10.

Page 10, please replace paragraph [0035] with the following amended paragraph:

[0035] As can also be learned from Fig. 2, the luglike protrusion 32 of the damping face 20 on the second end face 5 of the magnet core 2 is preferably attached from above the outer edge of the armature plate 11 of the magnet armature 10. As a result, upon the opening motion of the armature plate 11 in the direction of the luglike protrusion 32, a throttle restriction is formed which decreases continuously in size during the opening motion of the magnet armature 10 or armature plate 11, so that the outflowing fluid through chamber 31, when the magnet armature 10 or armature plate 11 is opening, is forced as a result to flow out through a constantly decreasing cross section in the radial direction. Because of the remaining fuel volume in the hydraulic damping chamber 31, the damping force attainable, which is indicated by ~~with~~ reference numeral 19 is markedly higher than when there is an unhindered outflow of the fuel volume from the hydraulic damping chamber 31 in the radial direction. Because the damping face 20 that creates the damping force 19 and defines the

hydraulic damping chamber 31 is made of a non-magnetic material 16, the magnetic properties of the magnet valve 1 remain unchanged. The damping face 20 is located in the remanent air gap 13 between the second end face 5 of the magnet core 2 and the face end 12 of the armature plate 11 of the magnet armature 10 (see the view in Fig. 1). Because the damping face 20 is embodied of a non-magnetic material 16 in the remanent air gap 13 of the magnet valve 1, the surface area that creates the damping force 19 can be designed such that a targeted amplification of the damping force 19 is established. If a non-magnetic material 16 such as plastic is cast on the second end face 5 of the magnet core 2, then the bouncing behavior of the magnet armature 10 or armature plate 11 can be adjusted in a targeted way by adjusting the angle 17 by means of simple grinding machining.

Page 12, please replace paragraph [0038] with the following amended paragraph:

[0038] In the view in Fig. 3, the non-magnetic filler 16 is disposed on the second end face 5 of the magnet core 2 such that a damping adjustment angle 17 is created which extends conversely to the damping adjustment angle 17 shown in Fig. 2. The hydraulic damping chamber 31 thus narrows, viewed in the radial direction, toward the stop sleeve 7 that surrounds the magnet core 2 in its outer circumference 27. The outside radius of the stop sleeve 7 as shown in Fig. 3 is identified - relative to the line of symmetry - by reference numeral 28.2. The damping force ~~19,~~ which results because of the inflow of fuel into the hydraulic damping chamber 31 that becomes narrower outward, shown in the variant embodiment of Fig. 3, is indicated by reference numeral 19. The spacing 15 identifies the gap height through which fuel flows ~~into the hydraulic damping chamber 15~~ from the inside of the hydraulic damping chamber 31.

Page 13, please replace paragraph [0041] with the following amended paragraph:

[0041] Fig. 5 shows a comparison of the courses of the damping force that are established in the variant embodiments of Figs. 2 and 3. The <u>courses of the</u> damping force 19 that is established in the hydraulic damping chamber 31 of the variant embodiment in Fig. 2 is identified by reference numeral 44. The course of the damping force established in the hydraulic damping chamber 31 in Fig. 3 is identified by reference numeral 45. The level of the damping force established in the hydraulic damping chamber 31 represented by the first course 44 of the damping force is considerably below the level of the damping force 19 in the second course 45 of the damping force that can be attained with the variant embodiment of Fig. 3. It is true of both courses 44, 45 of the damping force that the damping force decreases steadily with an increasing stroke, taking the remanent air gap into account, and reaches its minimum at the maximum stroke of the armature plate 11 in the direction of the magnet core 2. An estimate of the courses 44, 45 of the damping force can be made for simple geometries using the lubrication gap theory.

Page 15, please replace paragraph [0047] with the following amended paragraph:

[0047] Unlike the variant embodiment, shown in Figs. 2 and 3, of a hydraulic damping chamber 31 between the magnet core 2 and the armature plate 11, the hydraulic damping chamber 31 <u>of Figure 6</u> extends at a constant height through the annular face portions 21, 22 and 23. The hydraulic damping chamber 31 is operative only whenever pure liquid is located in the hydraulic damping chamber 31. If there is air or a mixture of air and liquid there, such as foam, then the attainable hydraulic damping, and in particular the first and second courses of the damping force 44 and 45 shown in Fig. 5, are impaired severely.

Please replace paragraph [0048] with the following amended paragraph:

[0048] With the variant embodiments described above, whether they are the embodiment of a damping face 20 extending parallel at a constant spacing 15 between the second end face 5 and the face end 12 of the armature plate 11 ~~1~~, or a damping face 20 with an angle 17 or a damping face 20 with a luglike protrusion 32, the quantity performance graph of a fuel injector can be improved considerably, and in particular, a quantity performance graph free of plateaus can be brought about. If a characteristic curve for a particular high-pressure level within a family of characteristic curves has a preinjection plateau, and if within this preinjection plateau the triggering duration is changed, then the quantity of fuel injected into the combustion chamber of the self-igniting internal combustion engine remains constant. The characteristic curves, established by the embodiment proposed according to the invention, for fuel pressures within a family of characteristic curves have a strongly monotonously increasing course, or in other words without any preinjection plateau. This in turn means that when the triggering duration is longer, more fuel will always be injected into the combustion chamber of the engine. This is the fundamental prerequisite for a zero-quantity calibration of a fuel injector. A plateau-free quantity performance graph is especially helpful in zero-quantity calibration of the fuel injector while the vehicle is in operation. Moreover, the embodiment proposed according to the invention of a hydraulic damping chamber 31 between the second end face 5 of the magnet core 2 and the face end 12 of the armature plate 11 of the magnet armature 10 makes it possible to reduce noise during operation of a fuel injector.

Page 16, please add the following new paragraph after paragraph [0048]:

[0049] The foregoing relates to preferred exemplary embodiments of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.

Please delete pages 17 and 18.